

A Critical Look at PACE Therapy

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Since the ASHA Convention of 1978 (Wilcox and Davis, 1978), many clinical aphasiologists have expressed interest in a new clinical strategy called Promoting Aphasics' Communicative Effectiveness, or PACE (Davis and Wilcox, in press). Clinicians have received varying information about the procedure through personal communication with the authors and from a videotape distributed by Memphis State University (Wilcox and Davis, 1979). This tape has been distributed to 25 VA Medical Centers and a handful of universities, and, I imagine, one-third to a half of you have seen it. After trying out the procedure at Memphis State for two and a half years with 16 aphasic patients, it is time for our own analysis of its special qualities and of its soft spots. We want to mix some caution into the enthusiastic responses we have received and want to reassure those who have been like someone from outside the family examining our new baby. There are those, in dealing with the infancy of PACE, who suggest "It still looks like Churchill to me," or "My little Nell never spit up like that," or "Are you sure it's yours?" So, as some of us skulk around PACE poking and pressing to see if it bruises, we discover that it bruises a little.

THE NATURE OF PACE

PACE is a formalized structure of interaction between the clinician and patient which incorporates components of face-to-face conversation. It is based on four principles which are described in Table 1. Each principle must be obeyed if PACE is to model natural conversational structure. Basically, the clinician and patient take turns sending new information to each other, and the clinician responds to the patient based on whether the patient's message was understood. At the very least, PACE provides a structure by which the patient can be observed in conversational roles and by which the clinician can experience and identify how a normal person can function in conversational roles with an aphasic person. Four functional roles are accessible to analysis; these are the patient as sender, the patient as receiver, the clinician as sender, and the clinician as receiver. Each role is carried out for the mutual purpose of exchanging messages.

Certain features of PACE make it qualitatively different from standard treatment as described by Brookshire, Nicholas, Krueger, and Redmond (1978; Haire and Davis, 1979). I have concluded that the most powerful feature is the new information principle, in which the patient must convey a message not already known by the clinician and the clinician must figure it out. This force, which is absent in standard imitative and confrontation naming tasks, allows real communication to be experienced in a clinical structure. We do not have to tell a patient that using a gesture is good; the patient experiences its value and shifts modality preferences on his own. I believe that emphasizing patient behaviors which convey new information may enhance carry-over from the clinic to natural circumstances. So, may the force be with you.

Table 1. The four principles of PACE and the general manner of their implementation.

- (1) Equal participation: The clinician and patient participate equally as senders and receivers of messages.
 - This is done by taking turns sending messages.
 - When the clinician sends a message, the patient can verbalize in a different role, that of receiver.

 - (2) New information: There is an exchange of new information between the clinician and the patient.
 - This is done by the sender's keeping his message (picture, printed word) from view of the receiver. Usually, a stack of message stimuli is face-down on the table, and the participants take turns drawing from the stack.
 - It is difficult to maintain genuineness; so, the clinician must minimize familiarity with the message stimuli. When the clinician is the receiver, s/he should give general feedback first in order to avoid responses based on familiarity with the stimuli.

 - (3) Free choice of channels: The patient has a free choice as to which communicative channels (modalities) s/he may use to convey new information.
 - The patient, when sending, may use any single channel or channels in combination.
 - The clinician does not direct the patient to use any particular channel. The clinician, when sending, can model the communicative value of channels which the patient may not be choosing to use.
 - This is a process of self-discovery by the patient as to his or her communicative options.

 - (4) Natural feedback: Feedback is provided by the clinician, when receiving, in response to the patient's success in conveying a message.
 - The clinician responds first to communicative adequacy.
 - Once the patient realizes the message is conveyed, the clinician may pursue linguistic adequacy for the same message. The clinician may encourage revisions or repairs or may provide standard cues. The latter can be done only because the clinician has understood the patient's message. Time to pursue linguistic adequacy is taken usually only when the patient wants to improve a verbal attempt.
 - In giving feedback for determining the patient's message, the clinician proceeds in a sequence from general to specific feedback, corresponding to scale points on a rating scale.
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An important part of this principle of new information is the clinician in the role of receiver. Receiving a patient's message in PACE is not a simple matter of expecting a certain well-defined response and of comparing the actual response to the expected one. The clinician should in no way be able to anticipate what the patient will do, but must be totally spontaneous; in many ways a rather insecure but challenging position. The clinician's attention and comprehending mechanisms must gear up to assume an active, productive role in interpreting the aphasic patient's message. The clinician finds himself or herself making mistakes like, (if you have seen the PACE tape) my thinking that a perfectly sound description of a jar actually meant "mold." (I won't speculate as to where my mental faculties were wandering off to at the time.) Nevertheless, this is one aspect of PACE that makes it feel different from other structured treatments. If it doesn't feel different, you are not doing PACE.

The soft spots of PACE arise from within its own framework as we try to carry out certain principles. These soft spots arise from traditional concerns directed at any treatment procedure. They are considered to be potential pitfalls to watch out for and problem areas that can be worked out with continued study of the procedure. I will use the rest of my time today to delineate some of these problem areas and to present our attempts to deal with them.

PROBLEMS WITHIN THE PACE FRAMEWORK

A major problem within the PACE framework lies in maintaining the force of the new information principle. The message stimuli, which must be unknown by the clinician and patient, are usually pictures or printed words placed face down on the table. The participants take turns drawing from the stack and conveying to each other what is on the stimulus cards. The problem comes with repeated use of 20 to 30 cards selected by the clinician, who often can remember what is on the cards. The clinician can easily fall into the trap of comprehending the patient by remembering the pictures rather than by tuning in to what the patient is conveying. The new information principle becomes diluted by learning what is in the stack of message stimuli. We have tried to minimize the influence of familiarity with the stimuli by changing stimuli from day to day, using a much larger number of stimuli, and having someone other than the clinician select the stimuli. We have also used a fail-safe mechanism in the feedback given by the clinician by requiring the clinician to provide very general feedback, such as "I didn't understand that," before attempting to confirm specific hypotheses about an ambiguous message from the patient.

Another aspect of PACE creates some discomfort in clinicians who are used to observing discrete responses that indicate that the patient has comprehended a linguistic input. The discomfort occurs when the clinician has sent a message, and the patient gives no clear indication that it was indeed comprehended. I usually ask the clinician to compare the situation with natural conversation and I tell the clinician that in real life we are often not sure if the aphasic person or anyone else has comprehended. The clinician is instructed simply to send messages in a manner which has been determined to be consistent with the patient's level of comprehension. The real problem with this soft spot comes when we want to measure the patient's ability as a receiver within the PACE structure. We have no clear solution for this problem.

FLEXIBILITY OF APPLICATION

As we do with respect to other procedures, we should ask whether PACE is adjustable for different levels of recovery within a given patient and whether it is applicable for a variety of different types of aphasia. A common concern is how PACE can be adjusted to present different levels of difficulty to a patient whose language function is improving. This point addresses the therapeutic value of PACE; that is, whether levels can be established which challenge the patient, pushing his or her communicative skills forward. Our videotape (Wilcox and Davis, 1979) presents suggestions for adjusting the complexity of message stimuli and of the clinician's modeling when sending messages. However, our previous preoccupation with the absence of specific response expectations from the patient (Haire and David, 1979) resulted in our ignoring a way of defining response expectations which would be consistent with PACE principles and which enables us to increase those expectations as the patient recovers language function.

We have decided that we can establish a criterion for the patient's success in conveying a message according to the number of concepts conveyed. A criterion as to number of concepts pertains to message completeness, not linguistic completeness, and, therefore, does not require that a particular vocabulary, syntactic structure, or channel be used to convey the message. For example, with a criterion of two concepts to convey what is in an action picture, the clinician would indicate comprehension when the patient conveys, let's say, an actor and an action. One concept could be conveyed verbally; another, by gesture. This strategy reduces the clinician's more natural role of using implications of an incomplete utterance to complete the message. However, this artificially shifted burden of communication onto the patient may enhance the therapeutic value of PACE. What do you think?

With respect to its use with different types of aphasic patients, we have been able to adjust the procedure so that 16 different aphasic patients were able to communicate in some way within the PACE structure. Ways in which PACE has been varied for these patients are suggested in Table 2, and the variety of patients who have functioned in PACE are represented in Table 3. All that this tells us is that PACE is malleable. We do not yet have substantial data to suggest that PACE is more or less effective than other forms of individual treatment for improving language function in particular or communicative ability in general.

Table 2. Areas of adjustment to PACE for different levels and types of aphasia.

Message stimuli:	pictures of objects pictures of events printed words numbers and quantities
Channels available to patient:	speech gesture emblems pantomime pointing writing
Clinician's modeling:	channel selection linguistic complexity
Patient's sending criterion:	one concept two concepts

Table 3. An indication of the varied levels of the 16 patients who have received PACE at Memphis State University since January, 1978. This information includes mean response levels on a scale from 1 to 16 and percentile levels from the PICA (Porch, 1971).

	<u>Overall</u>	<u>Gestural</u>	<u>Verbal</u>	<u>Graphic</u>
Range	14.14-7.76	14.30-9.36	14.30-3.78	13.91-5.00
Mean	9.85	12.19	8.23	7.49
%ile Range	94-23	90-17	87-14	97-12

However, I have some preferences regarding the use of PACE and standard direct treatment with different neurogenic communicative disorders. These preferences should become hypotheses tested with single subject and small group designs. At Memphis State, we have come to rely on PACE in at least equal proportion to standard treatment for Broca's, anomic, and other moderate-to-mild aphasias. In these cases, we have used standard direct approaches more for language functions not necessarily used in face-to-face interactions, such as reading and writing. Severely impaired mixed and Wernicke's aphasic patients appear to require greater attention with standard treatment early in the treatment process. This is recommended because PACE does not provide a firm grip on the patient's auditory comprehension which needs the intensive stimulation familiar to all aphasiologists (Brookshire, 1978; LaPointe, 1978). Also, when apraxia of speech is a primary deficit, we prefer standard treatment directed at the motor speech function (Rosenbek, 1978) for at least half of the patient's session of treatment.

MEASUREMENT

Finally, one soft spot at which we have been poking a lot lately is difficulty with recording data on patient performance during a PACE activity. During PACE, clinician and patient behavior is not predetermined, and the clinician's attention is absorbed in interpreting the patient's message and in generating hypotheses about an ambiguous message. Also, the kind of data we are interested in is different, since behavior is directed toward communicative adequacy, not linguistic adequacy. We have been developing measurement procedures by videotaping one sample of each patient's treatment per week. This sample consists of 25 to 30 turns by the clinician and patient. Measurements are taken during a review of the videotaped sample.

Our clinicians record two types of data. One type is the frequency of channels used by the patient to convey messages as a sender and a receiver. With these data, we can determine whether a patient is increasing the use of verbal or gestural channels in a communicatively successful manner. The other type of data is aimed at the patient's efficiency as a communicator and, so far, is obtained only for the patient's performance when sending messages. We have been using a six-point rating scale in which scale points are defined in part by the effort required of the clinician, as receiver, to interpret the patient's message. Definitions of scale points are shown in Table 4. Remaining issues in developing such a scale are included in these

Table 4. Rating scale for patient's communicative effectiveness on each turn as a message sender in PACE (developed with Gary J. Barnes, doctoral assistant).

Score	Definition
5	Message conveyed on first attempt. There are two possible definitions of best performance: (a) message conveyed with combined active participation of the patient's sending behavior and the clinician's ability to make an appropriate interpretation from information given by the patient, acknowledging the usual contribution of the listener in any conversation or (b) a specified required completeness of the patient's sending behavior in terms of number of concepts conveyed, minimizing the clinician's filling in of missing parts and placing a greater burden on the patient for the communication.
4	Message conveyed as above (a or b) after <u>general feedback</u> from the clinician indicating the first attempt had not been completely understood. This includes the clinician's repeating the patient's attempt in a questioning fashion.
3	Message conveyed as above (a or b) after <u>specific feedback</u> . This feedback reflects the clinician's assuming an active role as receiver in determining the patient's message, either by proposing hypotheses about the messages (topic, semantic relations) or by suggesting an additional channel be used ("show me," "tell me anything about it"). Clinicians sometimes risk pursuing this level of feedback too long, especially having ignored that the message was conveyed. Because of the varied types and amounts of feedback possible, this category might be differentiated into a greater number of scale points in order to make the scale more sensitive to efficiency. We have not yet worked out what this differentiation would be.
2	Message partially conveyed by the patient, only after general (point 4) and specific (point 3) feedback have been attempted.
1	Message not conveyed appropriately despite efforts by the patient and clinician reflected in points 4 and 3.
0	Patient does not attempt to convey the message.
U	Unscorable response, usually because one or more of the principles of PACE were violated in the interaction.

definitions. Use of this scale depends on a certain sequence of behavior by the clinician as receiver.

CONCLUSION

PACE is exciting to us because it has presented us with clinical insights and problems that we had not confronted before. It has opened a new area of investigation for us, and we hope it does so for some of you as well. We feel that 50 heads working on a problem might achieve a quicker solution than three or four heads working on it. This is why we present PACE to you, in its infancy, so that if it is to mature as a viable clinical option all of us will have participated in some way in its growth.

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DISCUSSION

- Q: It seems like you are trying to expand strategies in the clinic room. I don't understand how the patient is supposed to transfer these activities to the outside world, how the patient is to generalize with this social interaction. This should be measured in terms of efficacy of your treatment.
- A: This is also a common concern regarding standard treatment, especially since it does not contain many components of communication in the outside world. Part of what we are trying to do with PACE is to inject into the clinical interaction components which exist in the outside world when two people are trying to communicate with each other. This is only one function of language; there are others such as writing a grocery list. Instead of making a leap into the outside world, we are bringing a little of the outside world into the therapy; and by doing that, we are putting the patient into a position to generalize better.
- Q: (continuation): Wouldn't you like to measure it?
- A: Sure.
- Q: (continuation): Don't you think that's important?
- A: Yes. We are presenting this procedure in order to encourage others to do this; and others are planning controlled studies. We have limited data gathered by Jeanne Wilcox in which PACE was compared with standard forms of treatment using eight subjects. They did better with PACE in terms of a role-playing measure modeled after Audrey Holland's CADL. They did not do better with PACE in terms of the PICA overall, but they did do better with PACE in terms of the PICA verbal score. However, this was a small group, and I encourage more of us to come up with that kind of information.
- Q: I am concerned about the applicability of PACE to high level patients if you retain communicative adequacy as one of the goals, rather than linguistic adequacy.
- A: We have used it with a couple of high level patients who were good communicators verbally. We did not try to teach them gestures; PACE is not a gesture therapy. We put them in PACE interaction and challenged them by having them convey information about a printed word, and the clinician had to guess what the printed word was. In this case, the patient had to be pretty specific to get his idea across. Also, we presented standard tasks oriented to more specific skills which they wanted to improve. These included high level reading and writing tasks. In one case, we worked on following a type of instruction that the patient had to deal with on a job he was returning to. PACE is not intended to be a replacement, especially for language skills not involved in face-to-face interactions.
- Q: For some high level patients, especially those with traumatic etiologies who have good language skills on structured tasks but who tend to become tangential in discourse, we have found that this is an interesting method pragmatically. The emphasis with this type of patient has more to do with communication than with language per se.
- A: You are giving the kind of feedback in PACE which says "I understood you or I didn't." This kind of feedback forces patients into readjustments of some kind.

- Q: For low verbal patients with whom you encourage use of gesture, is the gesture a facilitator or stimulator of verbal expression?
- A: We are relying on the observations of others, such as Skelly, who have suggested that gesture can be a facilitator. We agree with them but have not carefully studied that question in the context of PACE.
- Q: Yes, but in that you are encouraging gesture, you just reported that you got verbal increases measured by the PICA.
- A: I forgot about that. Thank you.
- Q: It seems that this type of therapy replicates the real world and would be very appropriate for high level patients, perhaps even more than for low level patients, because you are asking patients for information that they don't already know, which is different from traditional therapy.
- A: Yes, that's what I meant in my answer with regard to feedback.
- Q: Dennis and Weigl-Crump in 1979 touched upon the patient's satisfaction with his or her language. Would you comment on that with respect to PACE therapy?
- A: I think that question is related to whether PACE's orientation toward communicative adequacy might ignore the patient's concern for linguistic adequacy. The way this issue arises in the interaction is when a patient is trying to utter a word and his utterance conveys the idea in 5 seconds, but the patient wants to take 30 seconds to produce an utterance to his satisfaction. We consider it to be extremely crucial that the clinician not wait 30 seconds for a "perfect" utterance but rather acknowledge quickly that the message was conveyed in 5 seconds. This reinforces the patient's ability as a communicator. However, we do not wish to ignore the patient's desire to improve upon that response. First, we respond with "I do or do not understand" and address ourselves to the communicative adequacy of the message. Once the patient realizes he or she has communicated successfully, then we pursue linguistic adequacy--usually when the patient wants to do so. This is done by providing cues, leading toward imitation if necessary. So, we do work on linguistic adequacy in the context of PACE, but we don't spend much time on it.
- Q: Regarding the previous question, in my experience with PACE there have been some instances where the patient comes forth with spontaneous language not shown before, and the communicative success experienced by the patient removes linguistic adequacy as an issue.
- Q: I think your proposal for a scoring system helps solve the problem, because once you've reached straight 5-level performance you begin to ask the question "Now what?" Then, perhaps, you begin to pursue linguistic adequacy as well.
- A: We'll increase the complexity of the stimuli the patient must talk about within the PACE structure and be more demanding in terms of the amount of information he might convey. This increasing demand may reduce the naturalness of the interaction a little bit, in that you get an appreciation for the contribution of a listener in natural conversation when you are doing PACE. We don't want to ignore that, because

that's the real world. On the other hand, we do want to make PACE challenging to the patient's expressive abilities, and we've just started to do that.

Q: I have a comment relative to the previous concern about the use of this treatment for the higher level aphasic. As you have described this program, it is oriented toward interaction with the clinician; and, with high level aphasic persons, their main concern may be with situations in everyday life such as a lawyer talking with a lawyer requiring vocabulary not familiar to the clinician. This, I think, is a limitation of a program of this sort. You could expand a program like this by varying the listener such as by bringing in a lawyer or another person to interact with the patient.

A: The limitation lies only in the way I talked about it, since I only talked about a clinician in the PACE interaction. We have found that it is very easy for another person, mainly the spouse in our experience, to slip into this kind of interaction. One of our graduates reported trying PACE in the more natural setting of the patient's home, and the family was observing and was itching to get involved in the interaction. The idea of having a friend or colleague get into the interaction is an excellent idea, because a crucial variable in communication is knowledge of the topic. It is one thing for the clinician to talk to a lawyer about the law, and it is different when two lawyers talk to each other about the law. We need to tune in to communicative variables like that.

Q: We've used PACE principles in sort of a contrived auditory comprehension setting. We put instructions on Language Master cards. The clinician cannot hear the card when it is played. The patient has to follow the instruction; and the clinician, from observing the response, has to guess what the instruction was. Instead of the clinician directing the patient and slowing down, the patient developed strategies on his own to assist the clinician. These were strategies which we had been trying to teach more directly for a long time without success. He really enjoyed doing it, instead of pointing to objects.